EN

B50
C50

Smart Camera / Vision Sensor / 1D- / 2D-Code Scanners / OCR Reader

Operating Instructions

Table of Contents

1. General

1.1 Information Concerning these Instructions

• These instructions apply to the product with ID code B50/C50.
• They make it possible to use the product safely and efficiently.

• These instructions are an integral part of the product and must be kept on hand for the entire duration of its service life.

• Local accident prevention regulations and national work safety regulations must be complied with as well.

• The product is subject to further technical development, and thus the information contained in these operating instructions may also be subject to change. The current version can be found at www.wenglor.com in the product's separate download area.

> **NOTE!**
> The operating instructions must be read carefully before using the product and must be kept on hand for later reference.

1.2 Explanations of Symbols

• Safety precautions and warnings are emphasized by means of symbols and attention-getting words

• Safe use of the product is only possible if these safety precautions and warnings are adhered to

The safety precautions and warnings are laid out in accordance with the following principle:

> **Attention-Getting Word!**
> **Type and Source of Danger!**
>
> Possible consequences in the event that the hazard is disregarded.
> • Measures for averting the hazard.

The meanings of the attention-getting words, as well as the scope of the associated hazards, are listed below.

> **DANGER!**
> This word indicates a hazard with a high degree of risk which, if not avoided, results in death or severe injury.

> **WARNING!**
> This word indicates a hazard with a medium degree of risk which, if not avoided, may result in death or severe injury.

> **CAUTION!**
> This word indicates a hazard with a low degree of risk which, if not avoided, may result in minor or moderate injury.

> **ATTENTION!**
> This word draws attention to a potentially hazardous situation which, if not avoided, may result in property damage.

> **NOTE!**
> A note draws attention to useful tips and suggestions, as well as information regarding efficient, error-free use.

1.3 Limitation of Liability

- The product has been developed in consideration of the current state-of-the-art and applicable standards and guidelines. Subject to change without notice.
- A valid declaration of conformity can be accessed at www.wenglor.com in the product's separate download area.
- wenglor sensoric elektronische Geräte GmbH (hereinafter referred to as "wenglor") excludes all liability in the event of:
    - Non-compliance with the instructions
    - Use of the product for purposes other than those intended
    - Use by untrained personnel
    - Use of unapproved replacement parts
    - Unapproved modification of products
- These operating instructions do not include any guarantees from wenglor with regard to the described procedures or specific product characteristics.
- wenglor assumes no liability for printing errors or other inaccuracies contained in these operating instructions, unless wenglor was verifiably aware of such errors at the point in time at which the operating instructions were prepared.

1.4 Copyrights

- The contents of these instructions are protected by copyright law.
- All rights are reserved by wenglor.
- Commercial reproduction or any other commercial use of the provided content and information, in particular graphics and images, is not permitted without previous written consent from wenglor.

2. For Your Safety

2.1 Use for Intended Purpose

The wenglor weQube is an optoelectronic sensor which is used for contactless inspection of specific objects.

The sensor unites image recording and evaluation in a single housing. The sensors work with a CMOS color or monochrome image sensor.

Image processing functions including measurement, object counting, checking for the presence of objects, pixel comparison, shape analysis, pattern matching, optical character reading and reference image comparison can be configured by means of a PC or laptop via the integrated Ethernet port. 1D and 2D codes can be read as well.

These image processing functions can be executed in trigger mode operation, as well as during continuous monitoring, and objects can be detected regardless of position thanks to tracking. Six convertible I/O switching outputs are available, which can be used as either inputs or outputs. Beyond this, an external lamp can also be connected to the weQube, and the integrated illumination can be partially or completely switched off.

This product can be used in the following industry sectors:

- Special machinery manufacturing
- Heavy machinery manufacturing
- Logistics
- Automotive industry
- Food industry
- Packaging industry
- Pharmaceuticals industry
- Clothing industry
- Plastics industry
- Woodworking industry
- Beverages industry
- Consumer goods industry
- Paper industry
- Electronics industry
- Glass industry
- Steel industry
- Printing industry
- Aviation industry
- Construction industry
- Chemicals industry
- Agriculture industry
- Alternative energy
- Raw materials extraction

2.2 Use for Other than the Intended Purpose

- Not a safety component in accordance with 2006/42/EC (Machinery Directive)
- The product is not suitable for use in potentially explosive atmospheres.
- The product may only be used with accessories supplied or approved by wenglor, or combined with approved products. A list of approved accessories and combination products can be accessed at www.wenglor.com on the product detail page.

DANGER!

Risk of personal injury or property damage in case of use for other than the intended purpose!
Use for other than the intended purpose may lead to hazardous situations.
- Observe instructions regarding use for intended purpose.

2.3 Personnel Qualifications

• Suitable technical training is a prerequisite.
• In-house electronics training is required.
• Trained personnel must have uninterrupted access to the operating instructions.

DANGER!
Risk of personal injury or property damage in case of incorrect initial start-up and maintenance!
Personal injury and damage to equipment may occur.
• Adequate training and qualification of personnel.

2.4 Modification of Products

DANGER!
Risk of personal injury or property damage if the product is modified!
Personal injury and damage to equipment may occur. Non-observance may result in loss of the CE marking and the guarantee may be rendered null and void.
• Modification of the product is impermissible.

2.5 General Safety Precautions

NOTE!
• These instructions are an integral part of the product and must be kept on hand for the entire duration of its service life.
• In the event of possible changes, the respectively current version of the operating instructions can be accessed at www.wenglor.com in the product's download area.
• Read the operating instructions carefully before using the product.
• Protect the sensor against contamination and mechanical influences.

2.6 Approvals and protection class

CE   /III/   c(UL)us LISTED IND. CONT. EQ. 72HL For use in class 2 circuits Environmental Type 1   **RoHS**

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3. Technical Data

3.1 List of Technical Data

Optical Characteristics	
Working range	≥ 20 mm (weQube with auto-focus)
Resolution	736 px × 480 px
Field of vision	See "Range of Vision Table"
Image chip	See section 3.2 on available sensor types
Type of light	See section 3.2 on available sensor types
Refresh rate (monochrome)	≤ 25 Hz
Refresh rate (color)	≤ 15 Hz
Service life	100,000 hours
Risk group (EN 62471)	Free group
Electrical Characteristics	
Supply power *	18 to 30 V DC
Current consumption (operating voltage = 24 V)	< 200 mA
Response time (monochrome)	< 40 ms
Response time (color)	< 66 ms
Temperature range	−25…55 °C **
Number of digital I/Os	6
Switching output voltage drop	< 2.5 V
Switching output switching current	100 mA
Short-circuit proof	Yes
Protected against polarity reversal	Yes
Overload-proof	Yes
Protection class	III
Interfaces	Ethernet 10/100 Base TX; Ethernet or Profinet (see section 3.2 on available sensor types)
Mechanical Characteristics	
Configuration interface	Ethernet port
Housing material	Aluminum
Protection	IP67
Connector type	M12×1, 12-pin
Ethernet connector type	M12×1, 8-pin
Configurable as PNP, NPN or push-pull	Yes
Can be switched to NC or NO operation	Yes
Illumination output	Yes
RS-232 interface	Yes ***
General Data	
Webserver	Yes (all Ethernet and Industrial Ethernet Devices, see section 3.2)

* Supply voltage residual ripple may not exceed 10 % (within the specified voltage range).
** −25 °C: Ambient conditions should not result in condensation; avoid the formation of ice on the front panel!
  55 °C: Continuous illumination at max. 1 % or flash mode at 100 % brightness with an exposure time of ≤ 5 ms: may affect the service life of the product.
*** Maximum connection length: 30 m
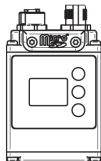
Range of vision

Range of vision table (weQube with auto-focus):

Working distance	20 mm	100 mm	200 mm
Range of vision	24 × 16 mm	74 × 48 mm	145 × 94 mm

With the C mount variant, the range of vision depends on the utilized C mount lens (details concerning the visual field can be found in the instructions for the respective lens).

NOTE!
The working distance is the distance from the front disc of the weQube to the test object.

3.2 Sensors with Monochrome Image Chip

Sensor type	Light / Connection	White Light	IR	Red Light
weQube Vision	Ethernet	B50S002	B50S003	-
		B50S005	B50S006	-
	Industrial Ethernet	B50S101	B50S102	-
		B50S104	B50S105	-
	Ethernet	B50S005	B50S006	-
	Industrial Ethernet	B50S104	B50S105	-
weQube Decode	Ethernet	C50C001	C50C002	C50C003
	Industrial Ethernet	C50C100	C50C101	C50C102
weQube	Ethernet	B50M002	B50M003	B50M004
	Industrial Ethernet	B50M101	B50M102	B50M104
weQube OCR	Ethernet	B50R001	-	-
	Industrial Ethernet	B50R100	-	-
	Ethernet	-	B50R002	-
	Industrial Ethernet	-	B50R101	-

3.3 Sensors with monochrome image chip and C-mount

Sensor type	Connection	Monochrome
weQube Vision	Ethernet	B50S012
		B50S014
	Industrial Ethernet	B50S111
		B50S113
	Ethernet	B50S014
	Industrial Ethernet	B50S113
weQube Decode	Ethernet	C50C011
	Industrial Ethernet	C50C110
weQube OCR	Ethernet	B50R011
	Industrial Ethernet	B50R110
weQube	Ethernet	B50M012
	Industrial Ethernet	B50M111

3.4 Sensors with Color Image Chip and Autofocus

Connection ⟍ Light	White light
Sensor type	
weQube Vision — Ethernet	B50S001
	B50S004
weQube Vision — Industrial Ethernet	B50S100
	B50S103
weQube Vision — Ethernet	B50S004
weQube Vision — Industrial Ethernet	B50S103
weQube — Ethernet	B50M001
weQube — Industrial Ethernet	B50M100

3.5 Sensors with color image chip and C-mount

Sensor type	Connection	Monochrome
weQube Vision	Ethernet	B50S011
		B50S013
	Industrial Ethernet	B50S110
		B50S112
	Ethernet	B50S013
	Industrial Ethernet	B50S112
weQube	Ethernet	B50M011
	Industrial Ethernet	B50M110

The following table specifies plug tightening torques and mounting options in order to assure compliant, error-free operation:
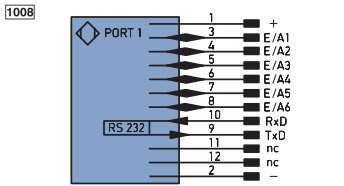
Connection	Tightening Torque (Nm)
12-pin M12	0.6
8-pin M12	0.4

3.6 Housing Dimensions
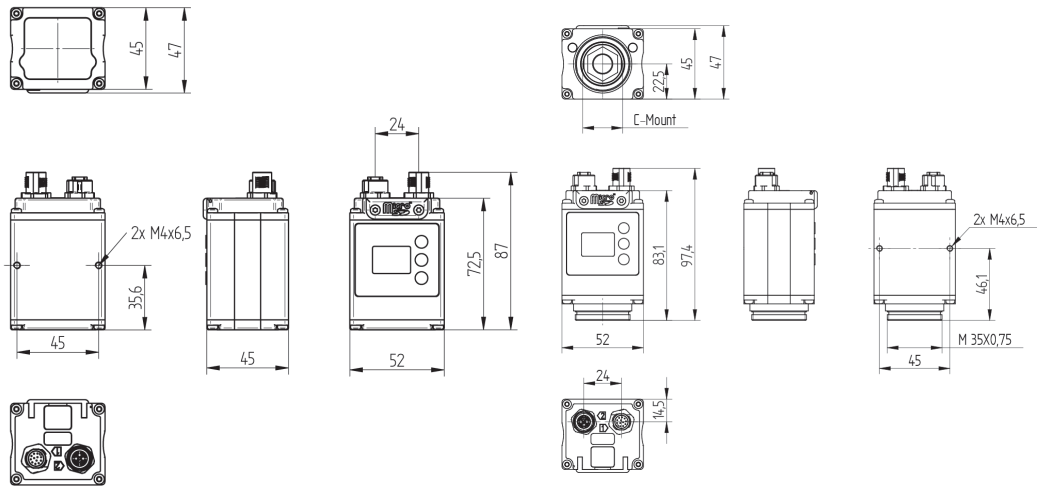
3.7 Connection Diagrams

Plug No. 1

| 1008 |

PORT 1		1	+
		3	E /A1
		4	E /A2
		5	E /A3
		6	E /A4
		7	E /A5
		8	E /A6
		10	RxD
RS 232		9	TxD
		11	nc
		12	nc
		2	–

Plug No. 2

| 002 |

PORT 2		1	Tx+
		2	Tx–
		5	
		6	
		7	
		8	
		3	Rx+
		4	Rx–

Legend
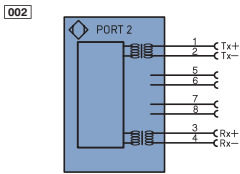
+	Supply Voltage +		PT	Platinum measuring resistor		EN A/Ā RS422	Encoder A/Ā (TTL)
–	Supply Voltage 0 V		nc	not connected		EN B/B̄ RS422	Encoder B/B̄ (TTL)
~	Supply Voltage (AC Voltage)		U	Test Input		EN A	Encoder A
A	Switching Output (NO)		Ū	Test Input inverted		EN B	Encoder B
Ā	Switching Output (NC)		W	Trigger Input		A MIN	Digital output MIN
V	Contamination/Error Output (NO)		W–	Ground for the Trigger Input		A MAX	Digital output MAX
V̄	Contamination/Error Output (NC)		O	Analog Output		A OK	Digital output OK
E	Input (analog or digital)		O–	Ground for the Analog Output		SY In	Synchronization In
T	Teach Input		BZ	Block Discharge		SY OUT	Synchronization OUT
Z	Time Delay (activation)		AMV	Valve Output		O LT	Brightness output
S	Shielding		a	Valve Control Output +		M	Maintenance
RxD	Interface Receive Path		b	Valve Control Output 0 V		r5V	reserved
TxD	Interface Send Path		SY	Synchronization		Wire Colors according to IEC 60757	
RDY	Ready		SY–	Ground for the Synchronization		BK	Black
GND	Ground		E+	Receiver-Line		BN	Brown
CL	Clock		S+	Emitter-Line		RD	Red
E/A	Output/Input programmable		⏚	Grounding		OG	Orange
⊗	IO-Link		SnR	Switching Distance Reduction		YE	Yellow
PoE	Power over Ethernet		Rx+/–	Ethernet Receive Path		GN	Green
IN	Safety Input		Tx+/–	Ethernet Send Path		BU	Blue
OSSD	Safety Output		Bus	Interfaces-Bus A(+)/B(–)		VT	Violet
Signal	Signal Output		La	Emitted Light disengageable		GY	Grey
BI_D+/–	Ethernet Gigabit bidirect. data line (A-D)		Mag	Magnet activation		WH	White
EN 0 RS422	Encoder 0-pulse 0-0̄ (TTL)		RES	Input confirmation		PK	Pink
			EDM	Contactor Monitoring		GNYE	Green/Yellow

3.8 Complementary Products

wenglor can provide you with suitable connection technology for your product.

Suitable mounting technology no.	560	
Suitable connection technology no.	50	87

S81				S89		
1		1		1		BN
2		2		2		BU
3		3		3		WH
4		4		4		GN
5		5		5		PK
6		6		6		YE
7		7		7		BK
8		8		8		GY
				9		RD
				10		VT
				11		GYPK
				12		RDBU
						S
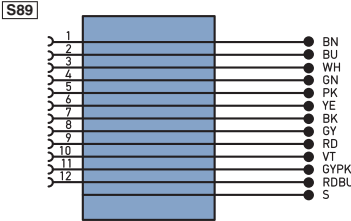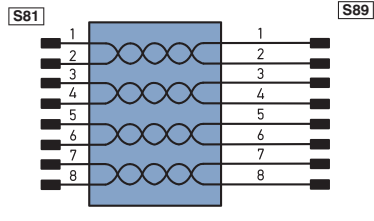
3.9 Layout
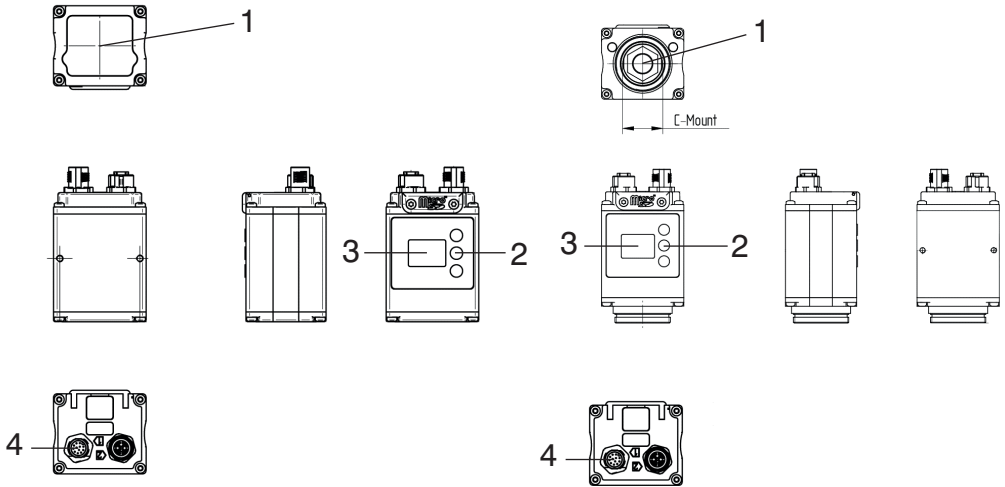
1 = image chip
2 = control keys
3 = display
4 = connector plug

3.10 Control Panel
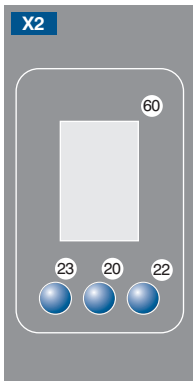
60: display
20: enter key
22: up key
23: down key

3.11 LED Display
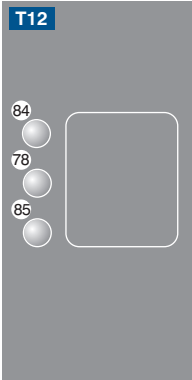
Profinet

LED	Function
84	Communication status
78	Module status
85	Link/act LED

Designation	Status	Function
CS (communication status) (only available with Profinet devices)	Off	Connection (AR) established with controller
	Green	Protocol not initialized
	Red	No connection (AR) to controller
MS (module status) (only available with Profinet devices)	Red	Error (class: fatal)
	Blinking red	Detection function, can be switched on via engineering tool
L/A	Green	Link available
	Blinking green	Communication

Ethernet/IP

LED	Function
84	Network status
78	Module status
85	Link/Act-LED

Description	Status	Function
NS (Network status)	Off	No IP address
	green	CIP connection
	Blinking green	IP configured, no CIP connection
	red	Duplicate IP address
	Blinking red	CIP connection Timeout
MS (Module status)	Off	-
	green	Device works
	Blinking green	Standby
	red	Fatal error
	Blinking red	Device error
L/A	Off	No Ethernet device connected
	green	Link available
	Blinking green	communication

3.12 Scope of Delivery

• B50 / C50
• Quickstart
• Initial start-up instructions

4. Transport and Storage

4.1 Transport

Upon receipt of shipment, the goods must be inspected for damage in transit. In the case of damage, conditionally accept the package and notify the manufacturer of the damage. Then return the device, making reference to damage in transit.

4.2 Storage

The following points must be taken into condition with regard to storage:

• Do not store the product outdoors.

• Store the product in a dry, dust-free place.

• Protect the product against mechanical impacts.

• Protect the product against exposure to direct sunlight.
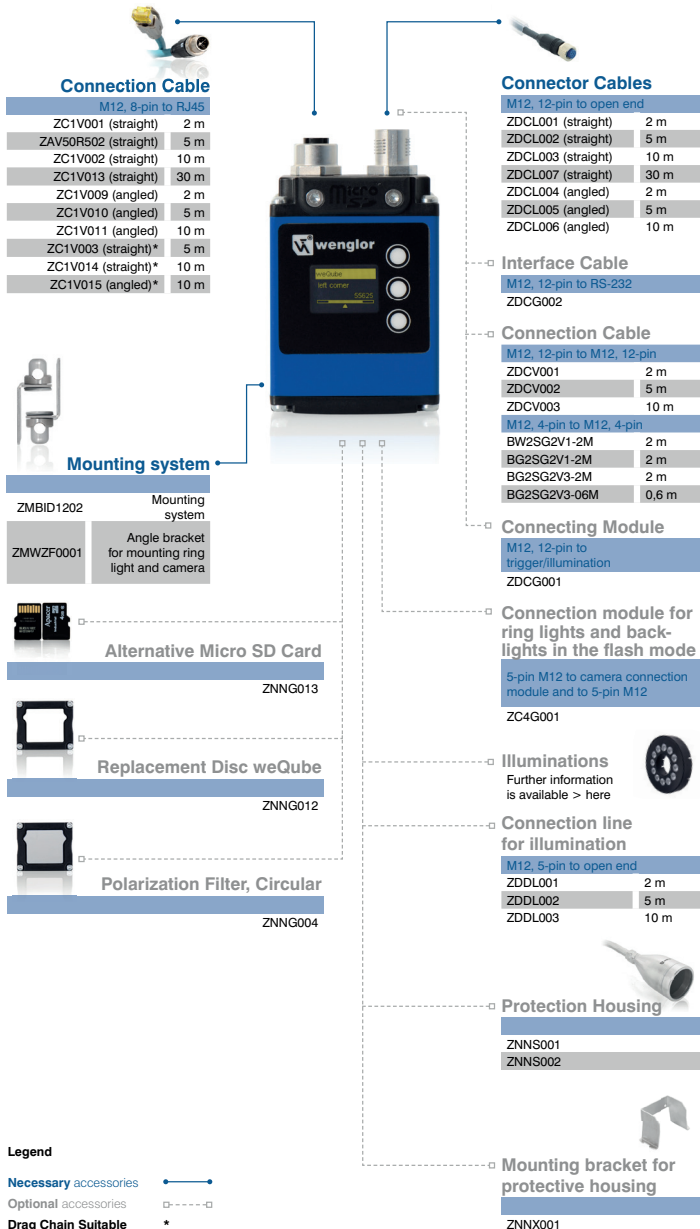

⚠️ **ATTENTION!**

Risk of property damage in case of improper storage!

The product may be damaged.
  • Storage instructions must be complied with.

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5. Installation and Connection

5.1 System Overview

Connection Cable

M12, 8-pin to RJ45	
ZC1V001 (straight)	2 m
ZAV50R502 (straight)	5 m
ZC1V002 (straight)	10 m
ZC1V013 (straight)	30 m
ZC1V009 (angled)	2 m
ZC1V010 (angled)	5 m
ZC1V011 (angled)	10 m
ZC1V003 (straight)*	5 m
ZC1V014 (straight)*	10 m
ZC1V015 (angled)*	10 m

Mounting system

ZMBID1202	Mounting system
ZMWZF0001	Angle bracket for mounting ring light and camera

Alternative Micro SD Card

	ZNNG013

Replacement Disc weQube

	ZNNG012

Polarization Filter, Circular

	ZNNG004

Connector Cables

M12, 12-pin to open end	
ZDCL001 (straight)	2 m
ZDCL002 (straight)	5 m
ZDCL003 (straight)	10 m
ZDCL007 (straight)	30 m
ZDCL004 (angled)	2 m
ZDCL005 (angled)	5 m
ZDCL006 (angled)	10 m

Interface Cable

M12, 12-pin to RS-232	
ZDCG002	

Connection Cable

M12, 12-pin to M12, 12-pin	
ZDCV001	2 m
ZDCV002	5 m
ZDCV003	10 m

M12, 4-pin to M12, 4-pin	
BW2SG2V1-2M	2 m
BG2SG2V1-2M	2 m
BG2SG2V3-2M	2 m
BG2SG2V3-06M	0,6 m

Connecting Module

M12, 12-pin to trigger/illumination	
ZDCG001	

Connection module for ring lights and backlights in the flash mode

5-pin M12 to camera connection module and to 5-pin M12	
ZC4G001	

Illuminations

Further information is available > here

Connection line for illumination

M12, 5-pin to open end	
ZDDL001	2 m
ZDDL002	5 m
ZDDL003	10 m

Protection Housing

ZNNS001
ZNNS002

Mounting bracket for protective housing

ZNNX001	

Legend

Necessary accessories •——•
Optional accessories □ - - - - □
Drag Chain Suitable *

Connection Cable

M12, 8-pin to RJ45	
ZC1V001 (straight)	2 m
ZAV50R502 (straight)	5 m
ZC1V002 (straight)	10 m
ZC1V013 (straight)	30 m
ZC1V009 (angled)	2 m
ZC1V010 (angled)	5 m
ZC1V011 (angled)	10 m
ZC1V003 (straight)*	5 m
ZC1V014 (straight)*	10 m
ZC1V015 (angled)*	10 m

Mounting System

ZB6Z01	Mounting System
ZMWZF0001	Angle bracket for mounting ring light and camera

Alternative Micro SD Card

ZNNG013

Protection Housing

ZSZ-02-01
ZSZ-03-01

Threaded pins for lenses

Z0070

Connector Cables

M12, 12-pin to open end	
ZDCL001 (straight)	2 m
ZDCL002 (straight)	5 m
ZDCL003 (straight)	10 m
ZDCL007 (straight)	30 m
ZDCL004 (angled)	2 m
ZDCL005 (angled)	5 m
ZDCL006 (angled)	10 m

Interface Cable

M12, 12-pin to RS-232
ZDCG002

Connection Cable

M12, 12-pin to M12, 12-pin	
ZDCV001	2 m
ZDCV002	5 m
ZDCV003	10 m

M12, 4-pin to M12, 4-pin	
BW2SG2V1-2M	2 m
BG2SG2V1-2M	2 m
BG2SG2V3-2M	2 m
BG2SG2V3-06M	0,6 m

Connecting Module

M12, 12-pin to trigger / illumination
ZDCG001

Connection module for ring lights and backlights in the flash mode

5-pin M12 to camera connection module and to 5-pin M12
ZC4G001

Lens

LAC9-14-K01	9 mm
LAC16-14-K01	16 mm
LAC25-14-K02	25 mm
LAC35-16-K02	35 mm
LAC50-23-K01	50 mm
LAC75-28-K01	75 mm

Illuminations

Further information is available > here

Connection line for illumination

M12, 5-pin to open end	
ZDDL001	2 m
ZDDL002	5 m
ZDDL003	10 m

Legend

Necessary accessories ●━━●
Optional accessories ▫----▫
Drag Chain Suitable *

5.2 Installation

- Protect the product from contamination during installation.
- Observe all applicable electrical and mechanical regulations, standards, and safety rules.
- Protect the product against mechanical influences.
- Make sure that the sensor is mounted in a mechanically secure fashion.
- Specified torque values must be complied with (see section "3. Technical Data", page 8).

ATTENTION!

Risk of property damage in case of improper installation!

The product may be damaged.
- Installation instructions must be complied with.

CAUTION!

Risk of personal injury or property damage during installation!

Personal injury and damage to the product may occur.
- A safe installation environment must be assured.

5.3 Electrical Connection

Connect the sensor to 18 to 30 V DC (see "3.7 Connection Diagrams" on page 12).

DANGER!

Risk of personal injury or property damage due to electric current!

Voltage conducting parts may cause personal injury or damage to equipment.
- The electric device may only be connected by appropriately qualified personnel.

5.4 Operation at a Controller

If you want to place the product into service at a controller, please complete the following steps:

- Connect the weQube to supply power and then to the controller via one of the Ethernet ports. Suitable connector technology can be found on wenglor's website.
- Install the respective device-specific electronic description file (or the GSDML file in the case of PROFINET) to the controller's hardware manager. The required file can be downloaded from: **www.wenglor.com → Product World → Product search (enter the product number) → Download → Device Description File.**

> **NOTE!**
> Details concerning initial start-up of the weQube Smart Camera with a controller can be found in a separate manual available from the product's download area at www.wenglor.com.

5.5 Port Assignments

5.5.1 Industrial Ethernet Cable

wenglor offers a range of preassembled Industrial Ethernet cables.
In order to assure simple and reliable wiring, we recommend using our preassembled Industrial Ethernet cables. It's advisable to use cables certified in accordance with the PROFINET standard without exception, in order to assure reliable and compliant operation (see also "PROFINET Cabling and Interconnection Technology Guideline for PROFINET" in this regard).

Pin assignments for Industrial Ethernet connection (X-coded):
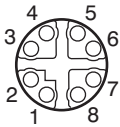
Pin	Function
1	TX+
2	TX-
3	NC
4	NC
5	NC
6	NC
7	RX+
8	RX-

5.6 Diagnostics

Required action in case of fault:

NOTE!

- Shut down the machine.
- Analyze and eliminate the cause of error with the help of the diagnostics information.
- If the error cannot be eliminated, please contact wenglor's support department.
- Do not operate in case of indeterminate malfunctioning.
- The machine must be shut down if the error cannot be unequivocally clarified or reliably eliminated.

DANGER!

Risk of personal injury or property damage in case of non-compliance!

The system's safety function is disabled. Personal injury and damage to equipment.
- Required action as specified in case of fault.

6. Functions Overview

6.1 Menu Structure

The desired menu language must be selected after initial start-up, and after each reset (see "7.9 Language" on page 32). You can switch to the configuration menu by pressing any key.

NOTE!

If no settings are adjusted in the configuration menu for a period of 30 seconds, the sensor is automatically returned to the display mode. The sensor accesses the last used menu view when a key is once again activated. If a setting is configured, it becomes active when the configuration menu is exited.

The keys are used for navigation, and for configuring settings. The functions of the navigation keys vary from menu to menu. The functions of the keys in the display are depicted as follows:

▲ : Navigate up
▼ : Navigate down.
◀|▶ : You can switch to the configuration menu by pressing any key.
◀ Back: Move up one level within the menu.
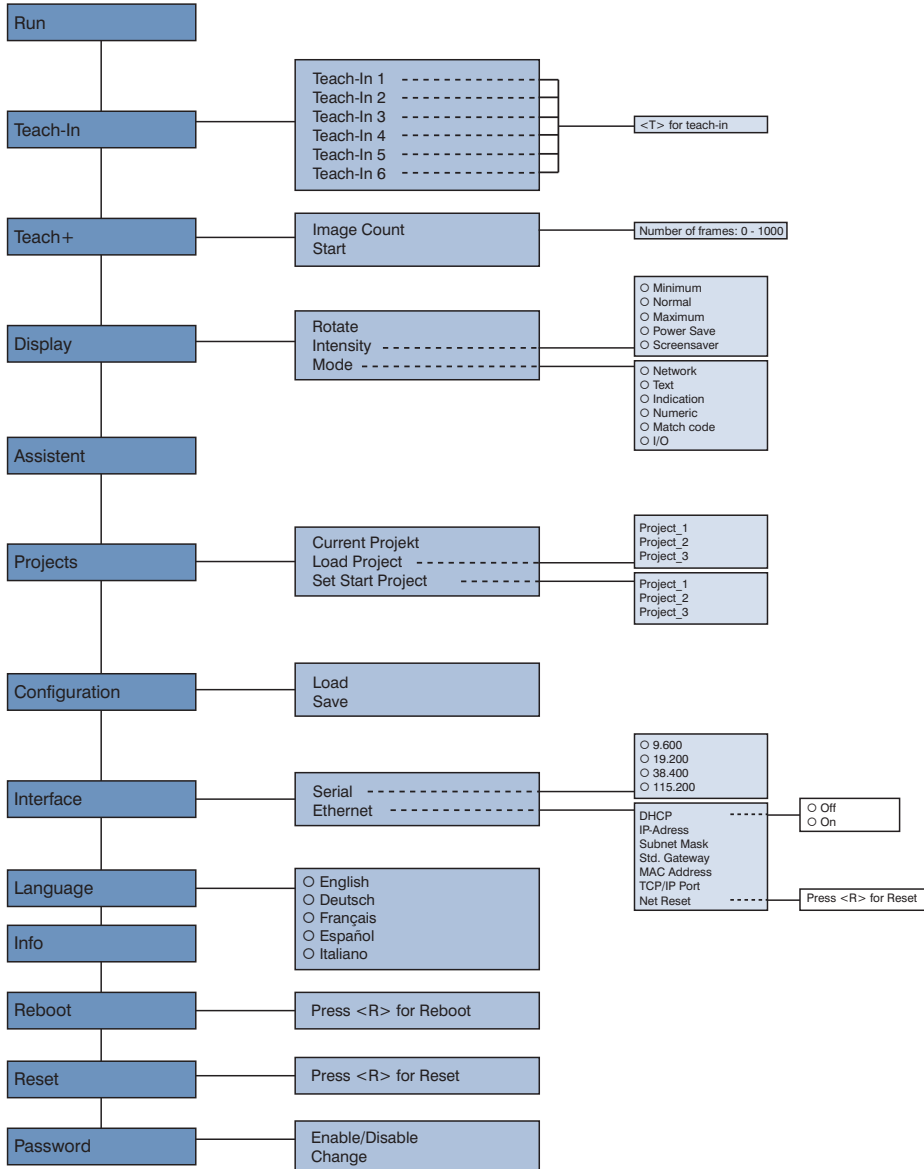◀◀ Run: Switch to the display mode.

ATTENTION!

Risk of property damage if sharp objects are used!

The keys may be damaged.
• Do not use sharp objects in order to enter settings.

The sensor's configuration menu is laid out as follows:

Run		
Teach-In	Teach-In 1 — — — — — — Teach-In 2 — — — — — — Teach-In 3 — — — — — — Teach-In 4 — — — — — — Teach-In 5 — — — — — — Teach-In 6 — — — — — —	<T> for teach-in
Teach+	Image Count Start	Number of frames: 0 - 1000
Display	Rotate Intensity — — — — — — Mode — — — — — —	○ Minimum ○ Normal ○ Maximum ○ Power Save ○ Screensaver ○ Network ○ Text ○ Indication ○ Numeric ○ Match code ○ I/O
Assistent		
Projects	Current Projekt Load Project — — — — — Set Start Project — — — —	Project_1 Project_2 Project_3 Project_1 Project_2 Project_3
Configuration	Load Save	
Interface	Serial — — — — — — — Ethernet — — — — — —	○ 9.600 ○ 19.200 ○ 38.400 ○ 115.200 DHCP — — — — IP-Address Subnet Mask Std. Gateway MAC Address TCP/IP Port Net Reset — — — —
		○ Off ○ On Press <R> for Reset
Language	○ English ○ Deutsch ○ Français ○ Español ○ Italiano	
Info		
Reboot	Press <R> for Reboot	
Reset	Press <R> for Reset	
Password	Enable/Disable Change	

7. Settings

The first time the sensor is started and after each reset, language selection and the assistant appear at first (see section 6.9).

Language	
English	▲
Deutsch	↵
Français	▼
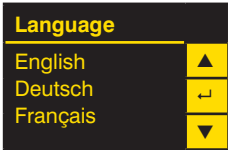
7.1 Run

The sensor is switched to the display mode.
The text mode is the default setting for the display mode. The display mode can be changed to the network mode, the status mode, the numeric mode or the match code mode in the display menu (see section "7.4.2 Mode" on page 27).

7.2 Teach-In

Subsequent sensor teach-in is possible with the display. Up to six teach options can be taught-in in this way. The parameters which are assigned to the memory locations is determined by means of the PC software. Upon delivery, no parameters are assigned to the teach-in memory locations.

Teach-In	Select memory location for teach-in
Teach-In 1 Teach-In 2 Teach-In 3 Teach-In 4 Teach-In 5 Teach-In 6 ◄ Back ◄◄ Run	Selection of up to 6 different memory locations for teaching in objects subsequently. **Note:** In order to be able to teach in a given object to the sensor via the OLED display, the desired teach-in function must first be linked to the corresponding teach-in memory location at the display with the help of the software (see separate software instructions).

Execute teach-in using the selected memory location.

Teach-In 1		Teach in certain object to the sensor.
Press <T> to teach in.	T ◄	Teach-in procedure: 1) Align the sensor to the desired object. 2) Press the "T" key -> the parameter value is taught in.

7.3 Teach⁺

In the case of Teach⁺, entire image sequences are saved to a compressed file, including all settings for the current project, for example interface settings etc. This file can be transferred to the PC with the help of software (see separate software instructions).

Teach⁺	Execute Teach⁺	
Number of frames Start ◄ Back ◄◄ Run	**Number of frames:** **Start:**	Select the number of frames for the Teach+ process. Start archive generation for the Teach+ process. A Teach+ procedure which has been started can be aborted by pressing the "C" key.

You can adjust the number of frames for the Teach⁺ process to meet your own individual requirements.

Number of frames		Select the number of frames for teach-in.
10	+ ↵	Press the "+" or "–" key in order to set the number of frames for the Teach⁺ process to a value between 0 and 1000.
	−	

NOTE!

Quicker scrolling through numbers is made possible by pressing and holding the respective key.

7.4 Display

Various changes can be made to the settings at the display in order to simplify operation of the sensor.

Display	Display settings
Rotate Intensity Mode ◄ Back ◄◄ Run	**Rotate:** Rotate the display 180°. The display is rotated 180° by pressing the ↵ key. The display can be returned to its original position by pressing the same key once again. **Intensity:** Adjust display intensity. **Mode:** Selection of various display modes for the "Run" mode

7.4.1 Intensity

Display intensity can be adjusted, for example to assure that the display is still easily legible even in bright environments.

Display	Adjusting display intensity
O Minimum O Normal O Maximum O Energy saving O Screensaver ◄ Back ◄◄ Run	**Minimum:** Display intensity is set to the smallest possible value. **Normal:** Display intensity is set to the middle value. **Maximum:** Display intensity is set to the highest possible value. **Energy saving:** If no keys are pressed for a period of one minute, the display is switched off, and is switched back on as soon as a key is activated. **Screensaver:** If no keys are pressed for a period of 30 seconds, the display is switched to the display mode and returns to the last used menu as soon as a key is activated.

7.4.2 Mode

The weQube display is equipped with various display modes which can be used as default settings for the run mode.

Mode	Selection of the display for the "Run" mode	
O Network O Text O Status O Numeric O Match code O I/O ◄ Back ◄◄ Run	**Network:**	The statuses of the various networks are displayed in the "Run" mode (TCP/IP, FTP, Industrial Ethernet). Possible status displays: **online:** The sensor is connected via the network. **offline:** The sensor is not connected to the network. Check sensor connection.
	Error:	There are problems with network connection.
	Text:	In addition to the sensor name, any desired sensor values can be displayed in the "Run" mode. Refer to the separate software instructions regarding configuration of the text display in the software.
	Status:	The statuses of the 6 different Boolean parameters are displayed in the "Run" mode. The following symbols may appear (see separate software instructions): | ● | Switched | | O | Not switched |
	Numeric:	Display of the selected value, as well as the upper and lower thresholds in bar graph format (see separate software instructions).
	Match code:	The saved parameter, e.g. a barcode with which scanned codes are compared, is displayed in the "Run" mode. Refer to the separate software instructions on how to save a match code.
	I/O:	The statuses of the 6 outputs are displayed in the "Run" mode. E1 to E6 for input 1 to 6 and A1 to A6 for outputs 1 to 6. O = not specified.

7.5 Assistant

The assistant is started automatically when the sensor is switched on for the first time, and each time the sensor settings are reset. However, it can also be started manually in order to simplify project selection and sensor configuration.

		Starting the Assistant
The assistant helps you in selecting the most import-ant settings in accordance with your require-ments. Do you want to enter further settings? Press Y for yes or N for no, briefly press ◄ to go back and press and hold ◄ to exit.	**Y** **N** **◄**	Start the assistant by pressing the "**Y**" key. After pressing the "**N**" key, the assistant is exited and the display is switched to the full menu. After briefly pressing the ◄ key once, the scrolling text for using the assistant is started again. The assistant is exited after briefly pressing the ◄ key twice, and the display is switched to the full menu. By pressing and holding the ◄ key, the assis-tant is exited and the display is switched to the configuration menu.

When using the assistant, you're provided with the following assistance for setting up the sensor:

		Loading the configuration from the SD card
Load configu-ration from SD card?	**Y** **N** **◄**	If you want to transfer the settings from the SD card to the sensor, press the "Y" key. **Caution:** Current sensor settings are overwritten! If you do not want to overwrite the existing sensor configuration with the settings saved to the SD card, press the "N" key. Press the ◄ key in order to return to the initial assistant window.

		Loading a project from the SD card
Load project from SD card?	**Y** **N** **◄**	If you want to transfer projects which have been stored to the SD card to the sen-sor, press the "Y" key. **Caution:** The project which is currently selected at the sensor is overwritten! If you **do not** want to select a project which has been saved to the SD card, press the "N" key. Press the ◄ key in order to return to configuration selection in the assistant.

Exiting the assistant		
You have completed all of the steps offered by the assistant. Do you want to run the assistant again?	Y N ◄	If you want to run the assistant again, press the "**Y**" key. After pressing the "N" key, the assistant is exited and the display is switched to the display mode. After briefly pressing the ◄ key once, the scrolling text is started again. After briefly pressing the ◄ key twice, project selection is displayed in the assistant.

7.6 Projects

The weQube system provides you with the opportunity of loading projects to the sensor which have been saved to the SD card, as well as defining start projects.

Projects	Project Management
Current project Load project Set start project ◄ Back ◄◄ Run	**Current project:** The name of the current project is displayed. **Load project:** A stored project included in the project list, or a new project, can be loaded. It will be displayed only the first 50 projects, that are stored on the SD card. **Set start project:** One project must be specified as the start-up project. This project is executed automatically when the sensor is started.

7.6.1 Current Project

Current project	Display of the current project
Project name ◄	The title of the currently loaded project is displayed. Press the ◄ key in order to return to configuration selection in the assistant.

7.6.2 Loading a Project

Load project	Load a project to the sensor which has been stored to the SD card.
Project_1 Project_2 Project_3 ◄ Back ◄◄ Run	Any given project can be selected and loaded to the sensor. The project name appears in abbreviated form.

7.6.3 Selecting the Start Project

Set start project	Selecting the start project
Project_1 Project_2 Project_3 ◄ Back ◄◄ Run	You can select a project from the project list in the "Set start project" menu, which is then selected automatically when the sensor is started.

7.7 Configuration

Configuration	Managing sensor settings
Load Save ◄ Back ◄◄ Run	**Load**: Settings saved to the SD card are loaded to the sensor. **Save:** Settings currently loaded to the sensor are saved to the SD card. In the event that the sensor is replaced, configuration of the new sensor is simplified by simply replacing the SD card. **Caution:** The previously stored sensor configuration is overwritten during the save operation.

7.8 Interface

In addition to its serial port, the sensor is also equipped with an Ethernet port

Interface	Interface selection
Serial Ethernet ◄ Back ◄◄ Run	**Serial:** The baud rate can be selected for the serial port. **Ethernet:** Settings for the Ethernet port can be configured.

7.8.1 Serial interface

Activate	Baud rate selection for the serial port
O 9,600 O 19,200 O 38,400 O 115,200 ◄ Back ◄◄ Run	Communication via the serial port can take place at various transmission speeds. Changes do not become effective until after the sensor has been restarted.

7.8.2 Ethernet

Ethernet	Settings for the Ethernet connection
DHCP IP address Subnet mask Std. gateway MAC address TCP/IP port Network reset ◄ Back ◄◄ Run	**DHCP:** Display: DHCP on or DHCP off **IP address:** Display of the selected IP address **Subnet mask:** Display of the selected subnet mask **Std. gateway:** Display of the selected standard gateway **MAC address:** Display of the preselected, non-changeable MAC address **TCP/IP port:** Display of the TCP/IP port **Network reset:** Resets network settings to their default values Changes do not become effective until after the sensor has been restarted.

7.8.2.1. DHCP

DHCP	DHCP server selection
O Off O On ◄ Back ◄◄ Run	It's possible to activate or deactivate assignment of the network configuration to the sensor via a server.

7.8.2.2. IP Address

IP address		Setting the IP address
192168100001	+ ↵ −	The IP address can be set by pressing the "+" and "−" keys.

IP address		Checking the IP address for correctness
192.168.100.001 Entry correct?	Y N ◄	Correctness of the entered IP address is confirmed by pressing the "**Y**" key and the address is transferred to the sensor. If necessary, the IP address can be reentered after pressing the "**N**" key. After pressing the ◄ key, the display is returned to the Ethernet network menu without saving the entered IP address.

The procedure for changing the subnet mask and the standard gateway is analogous to entering the IP address.

7.8.2.3. MAC Address

MAC Address		Displaying the MAC Address
54:4a:05:00:08:04	◄	The sensor's unchangeable MAC address is displayed. After pressing the ◄ key, the display is returned to the Ethernet network menu.

7.8.2.4. Network Reset

Network reset		Resetting the Network Configuration
Press <R> to reset.	R	The network configuration can be reset by pressing "**R**".
	◄	After pressing the ◄ key, the display is returned to the Ethernet network menu.

Default values for network settings:
IP address: **192.168.100.1**
Subnet mask: **255.255.255.0**

7.9 Language

The menu language can be changed in the "Language" menu. The user is automatically prompted to select a language when the sensor is first started up, as well as after each reset.

Language	Selecting a menu language
O English O Deutsch O Français O Español O Italiano ◄ Back ◄ ◄ Run	The selected language appears in the menus as soon as it has been selected.

7.10 Info

Info	Display of sensor information
Sensor type B50S001 Product version 1.0.0 Serial number 504215773	Sensor type, product version, serial number and status are displayed in the information menu. These entries play an important role in the event that technical problems should occur, and when contacting **Technical Support** with questions.

7.11 Restart

Restart	Restarting the sensor
R	Restating of the sensor can be forced by pressing "**R**".
Press <R> to restart. ◄	After pressing the ◄ key, the display is returned to the main menu.

7.12 Reset

Sensor settings (except for network settings) can be returned to their default values in the "Reset" menu.

Reset	Restore default settings
R	All of the selected sensor settings are returned to their default values by pressing the "**R**" key.
Press <R> to reset. ◄	After pressing the ◄ key, the display is returned to the main menu.

7.13 Password

Password protection prevents inadvertent changes to selected settings.

Password	Activating the password function
De/activate Change ◄ Back ◄◄ Run	**De/activate:** Activate or deactivate password protection. When password protection is activated, the sensor is automatically disabled after pressing any in the "Run" mode. **Change:** Change the password.

If the password function is active, the password must be entered each time the sensor is operated. After the password has been correctly entered with the "+" and "−" keys, the menu is enabled and the sensor can be operated.

• The password function is deactivated upon shipment from the factory.
• Passwords can be selected within a range of 0000 to 9999.

Be sure to make a note of the new password before exiting the "change password" function! If the password is forgotten, it must be overwritten with a master password. The master password can be requested by e-mail from **support@wenglor.com**.

7.14 Status Information

In addition to status information and warnings in the "Info" menu, messages are also displayed as symbols in the run window.

weQube ⚠	Critical Error
	A critical error has occurred.

weQube ⚠ 0x01	Fatal Error
	A fatal error has occurred. The sensor must be restarted.

8. Software

The weQube is parameterized with free uniVision software. The software can be downloaded from wenglor.com/visionworld.
Information and explanations concerning individual software solutions can be found on the respective software product page on the Internet.

NOTE!
Utilized third-party software licenses can be found directly on the product, and on our website at: https://www.wenglor.com/license/.

9. Maintenance Instructions

NOTE!
• This wenglor sensor is maintenance-free.
• Cleaning and inspection of the plug connections at regular intervals are advisable.
• Do not clean the sensor with solvents or cleansers which could damage the product.
• The product must be protected against contamination during initial start-up.

10. Proper Disposal

wenglor sensoric GmbH does not accept the return of unusable or irreparable products. Respectively valid national waste disposal regulations apply to product disposal.

11. Appendix

11.1 Change Index, Operating Instructions

Version	Date	Description/Change
1.0.0	18.02.2014	Initial version of the operating instructions
2.0.0	17.07.2018	Description of software in separate operating instructions
2.1.0	18.06.2019	Description of web-based configuration in software instructions
2.2.0	18.03.2020	• Updated range of vision • Additions to utilized third-party software licenses

11.2 EU Declaration of Conformity

The EU declaration of conformity can be found on our website at www.wenglor.com in the product's download area.